SHARP Service Manual

DOLBY SYSTEM ®

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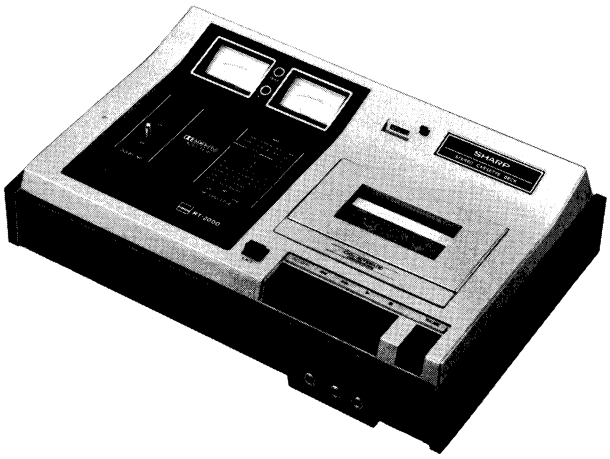


MODEL RT-2000H

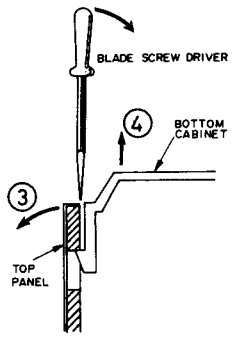
SPECIFICATIONS

Type:	AC operated 4-track 2-channel Solid-state Stereo Cassette Tape Record/ Playback Deck with Built-in Dolby "B" type Noise Reduction & Full-automatic Stop System
Power source:	AC 110/220/240V, 50Hz
Power consumption:	11 watts
Semiconductors:	4-transistor, 12-Auxiliary Transistor, 4-IC, 27-diode, 1-Silicon Controlled Rectifier, 2-Light Emission Diode
Dimensions:	406mm(W) x 256mm(D) x 112mm(H)
Weight:	5.4 kg
Input circuitry:	Microphone jack 500 ohm x 2 REC/PB(DIN) Socket x 1
Output circuitry:	Headphones output jack 8 ohm x 1 REC/PB(DIN) Socket x 1
Tape:	Philips standard compact cassette tape
Tape speed:	4.8cm/sec
Record/Playback time:	60 minutes (C-60)
Recording system:	AC bias system (84 kHz)
Erasing system:	AC erasing
Fast forward & Rewind time:	100 seconds (C-60)
Wow & Flutter:	0.2% Weighted peak (DIN)
Frequency response:	40 – 14,000Hz (CrO_2 tape, DIN) 40 – 12,000Hz (Normal tape, DIN)
S/N ratio:	50 dB (DOLBY OFF) 55 dB (DOLBY ON)
Distortion:	1.5%
Channel separation:	34 dB
Erase ratio:	65 dB
Input sensitivity & input impedance:	Microphone 0.2mV @ 50k ohms REC/PB(DIN) Socket Low: 0.8mV, 9k ohms High: 40mV, 390k ohms
Output level & loaded impedance:	Headphones 63mV (0VU) @ 8 ohm REC/PB(DIN) Socket 500mV (0VU), 50k ohms

SHARP CORPORATION OSAKA, JAPAN

CABINET REMOVAL (Refer to Figure 1)

1. Depress the EJECT knob and take out the cassette.
2. Remove 2 RECORD LEVEL control knobs.
3. Remove 2 cabinet bottom retaining screws and cabinet bottom.
4. Now, the panel top is ready for removal.



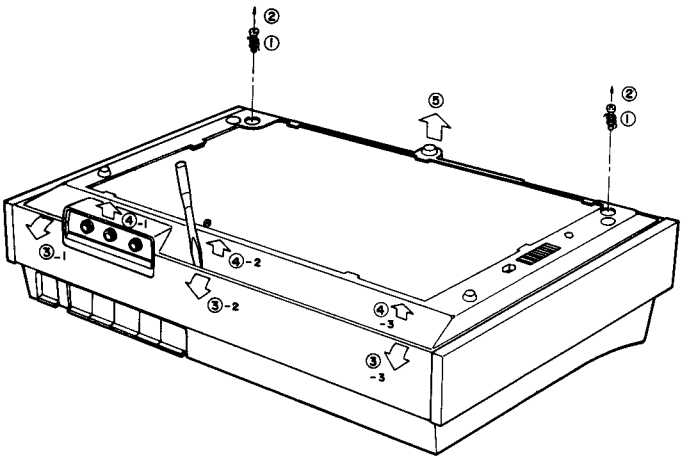


Figure 1

PAUSE MECHANISM ADJUSTMENT (Refer to Figure 2)

1. Put the mechanism in PLAY mode and slowly depress the pause pushbutton. At the time, see that the take-up idler and take-up turntable come off from each other and also the capstan shaft and pressure roller come off from each other.
2. If it is found that the checking in the step 1 above is not satisfied, further adjust the adjustment point shown in Figure 2.

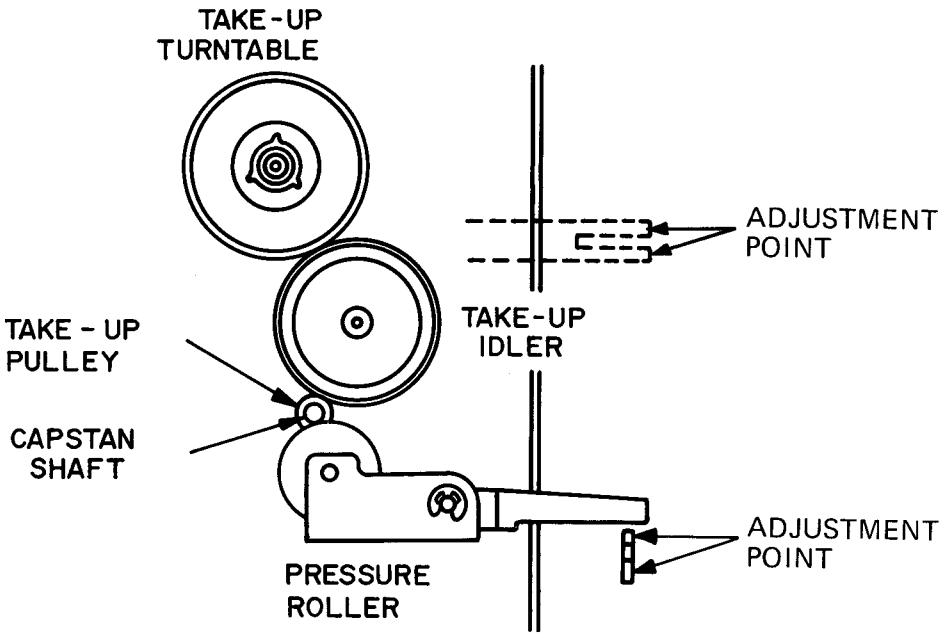


Figure 2

PRESSURE ROLLER PRESSURE ADJUSTMENT (Refer to Figure 3)

1. With power supply turned on, push the point A with use of tesnion gauge to make the pressure roller apart from the capstan shaft. Then, gradually release the tension gauge and read its value when the pressure roller starts to rotate.
2. It is normal when the tension gauge reads 335 – 415 g. If the above value is not satisfied, change the setting position of pressure spring.

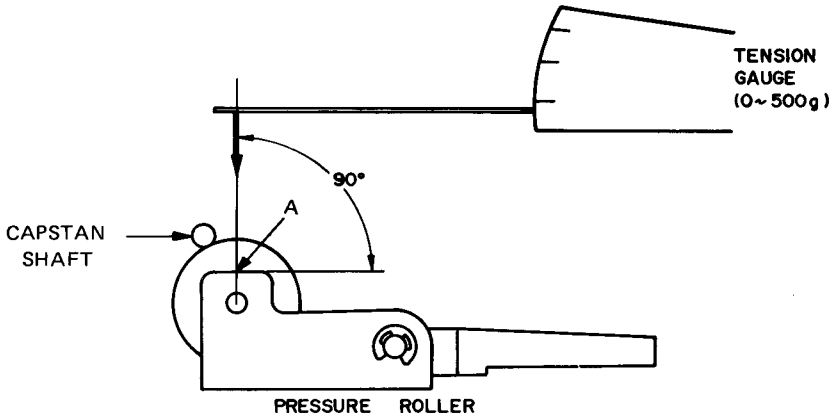


Figure 3

FLYWHEEL THRUST CLEARANCE ADJUSTMENT (Refer to Figure 4)

Slowly tighten the screw for flywheel thrust clearance until the thrust clearance becomes 0 (zero) and loosen the screw by 2/5 turn from this point. Since screw's pitch is 0.5mm, thrust clearance of about 0.2mm is produced.

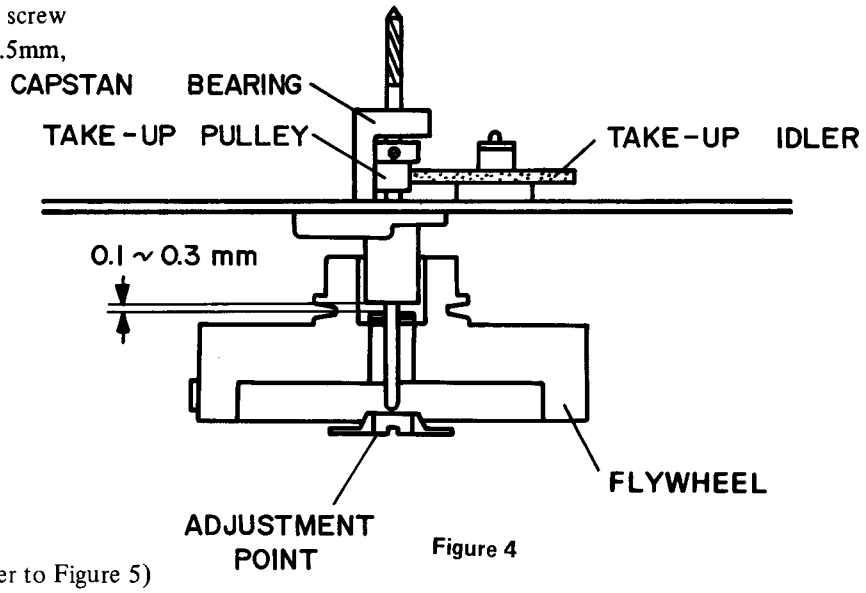
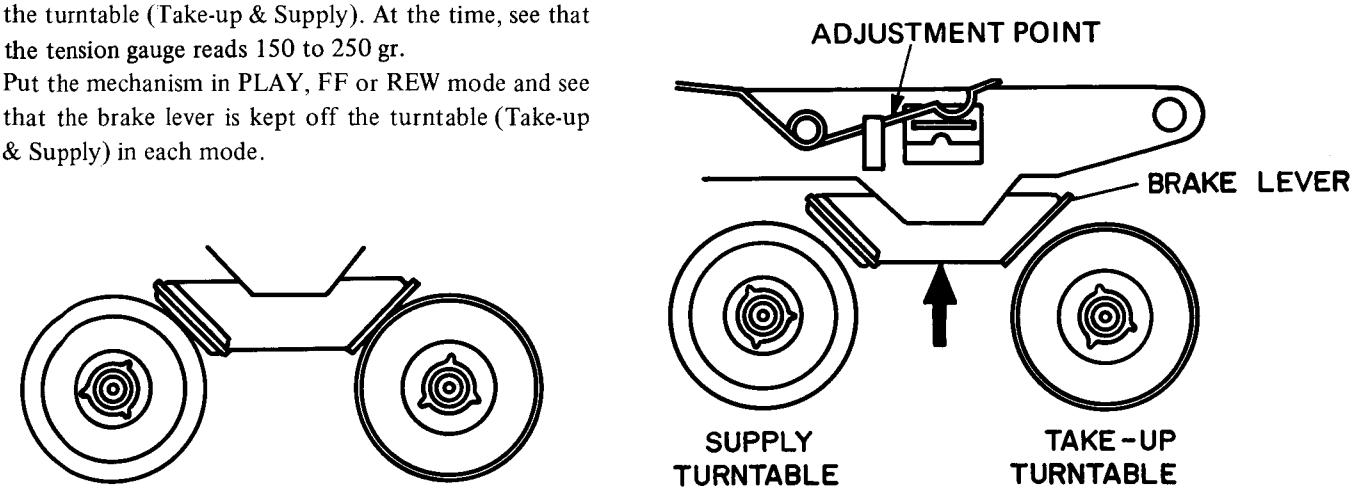


Figure 4

BRAKE MECHANISM ADJUSTMENT (Refer to Figure 5)

1. Put the mechanism in STOP mode, push the brake lever in the arrowed direction shown in Fig. 5 by using a tension gauge (0 ~ 300 gr.) until the brake lever touches the turntable (Take-up & Supply). At the time, see that the tension gauge reads 150 to 250 gr.
2. Put the mechanism in PLAY, FF or REW mode and see that the brake lever is kept off the turntable (Take-up & Supply) in each mode.



STOP MODE

Figure 5

PLAY, FF, REW MODE

TORQUE CHECK (Refer to Figure 6)

1. Set the torque measuring reel to the turntable (to the take-up side at PLAY or FAST FWD mode and to the supply side at REWIND mode).
2. Then, rotate the reel in the same direction as for turntable and read the torque value when the pointer is stabilized.

Mode	Torque Value
PLAY	30 – 60 gr. cm
FAST FWD	55 – 90 gr. cm
REWIND	55 – 90 gr. cm

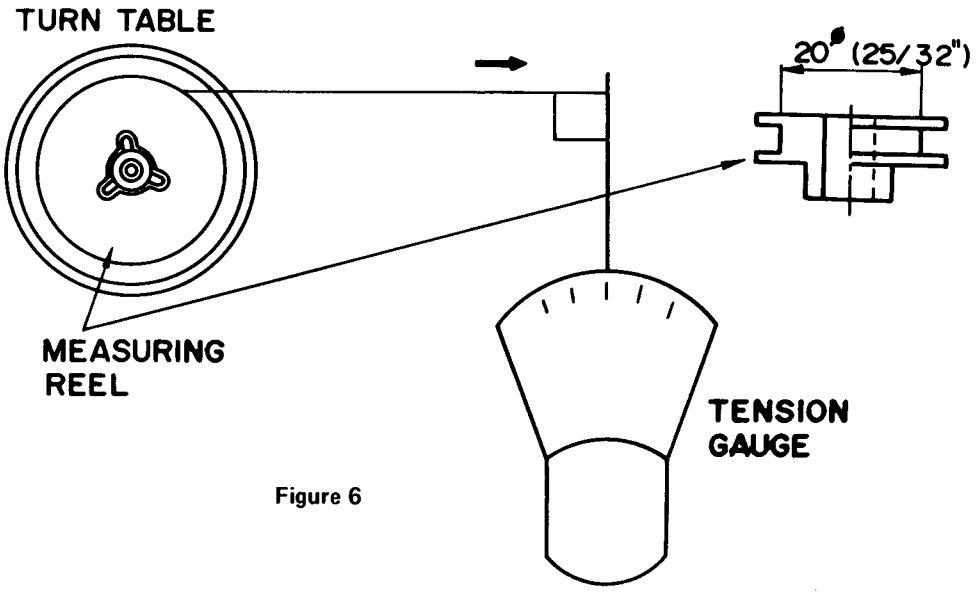


Figure 6

MOTOR SWITCH SETTING POSITION ADJUSTMENT (Refer to Figure 7)

1. Check that the brake return lever is pressed against the switch (SW8) in PLAY mode and that the brake return lever is apart at the distance from the switch (SW8) in STOP mode.
2. Adjust it by bending the adjustment point when the distance is abnormal.

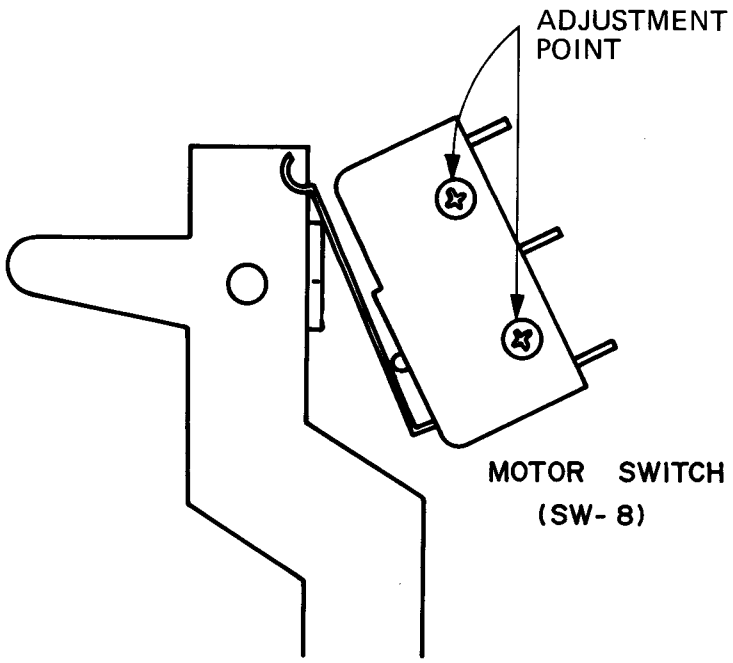


Figure 7

MUTING SWITCH SETTING POSITION ADJUSTMENT (Refer to Figure 9)

Loosen the screw so that the contact clearance will be 0.3 ~ 0.5mm in the PLAYBACK mode, as shown in Figure 9. Be sure the contact points touch with each other tightly.

BIAS SWITCH SETTING POSITION ADJUSTMENT (Refer to Figure 8)

Loosen the screw so that the contact points will be touch with each other tightly in the PLAYBACK mode.

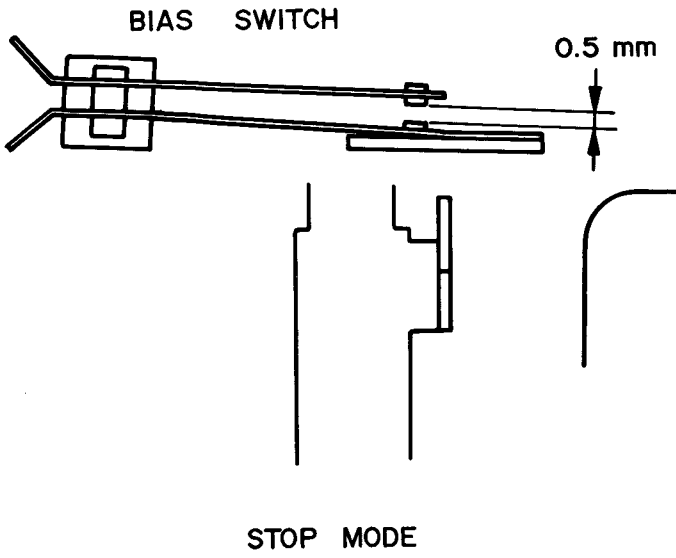


Figure 8

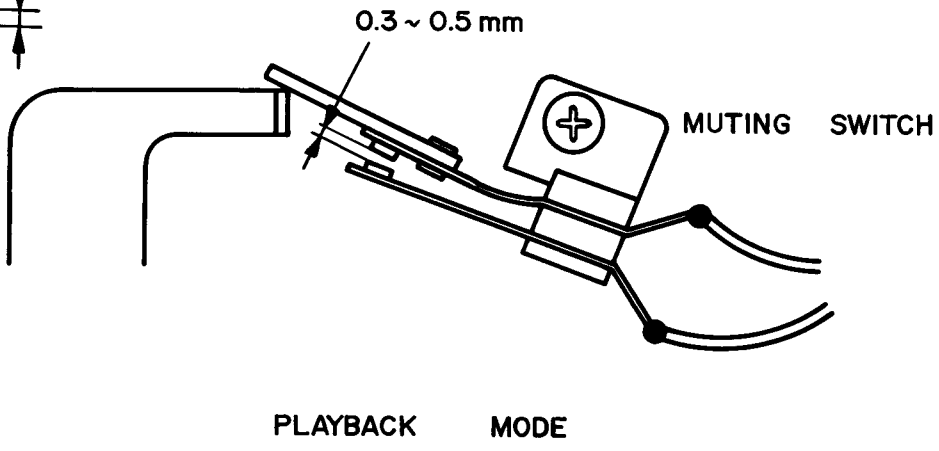


Figure 9

CHECK AND ADJUSTMENT OF TAPE SPEED

(Refer to Figure 10)

1. Playback a test tape of 3,000 Hz, available in the market.
2. Connect a frequency counter to REC/PB terminal.
3. At the time, it is normal if the frequency counter reads 3,000 Hz ±1%. If the reading is other than the above, adjust VR601 shown in Figure 10.

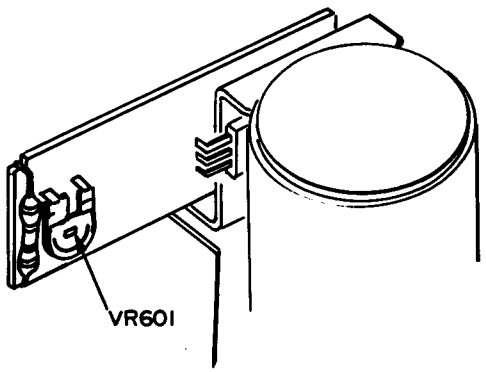


Figure 10

ELECTRICAL ADJUSTMENT

RECORD AMPLIFIER BIAS OSCILLATOR ADJUSTMENT (Refer to Figure 11)

1) As shown in Fig. 11, connect the V.T.V.M. in between the test point (TP-5, TP-6) and earth.
2) Set the Auto Tape Selector Switch (SW6) in the NORMAL position.
3) Set the unit at "RECORD" mode.
4) Then, connect the frequency counter to the output terminal of the V.T.V.M. and adjust the oscillation coil (L203) so that the bias oscillation frequency becomes 84 kHz.
5) Adjust the Semi-variable resistor (VR201, VR202) so that the V.T.V.M. reads 45mV.
6) To check the CrO_2 position, leave Auto Tape Selector Switch (SW6) in the CrO_2 position. It is normal if V.T.V.M.'s reading is 61 ~ 69mV.

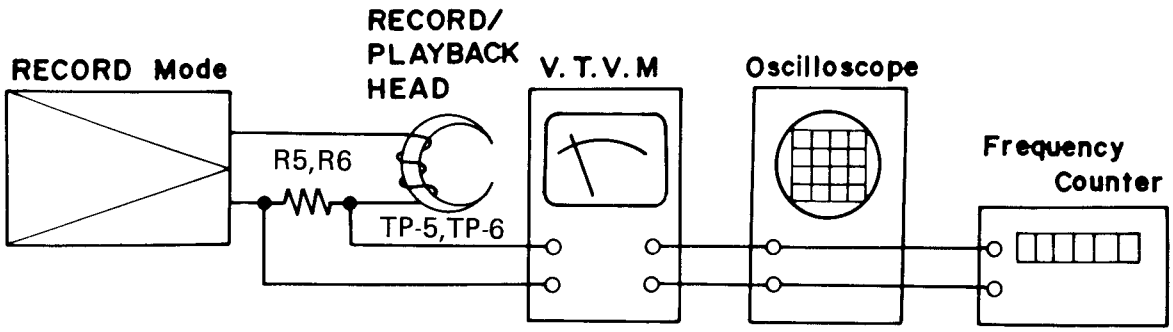


Figure 11

LEVEL METER SENSITIVITY ADJUSTMENT (Refer to Figure 12)

1) Connect the V.T.V.M. in between the test point (TP-1, TP-2) and earth.
2) Set Dolby Noise Reduction Switch (SW-5) in the off position, and DIN Input Level Switch (SW3) in the HIGH position.
3) With the unit set at "RECORD" mode, give it signal of −10 dB, 1 kHz from REC/PB socket (SO101) and adjust RECORD LEVEL Control (VR3, VR4) so that the V.T.V.M. reads 580mV.
4) At this time, adjust the semi-variable resistor (VR9, VR10) so that the level meter indicates Dolby Level (it means a level of "+3VU" indicated on the level meter.)

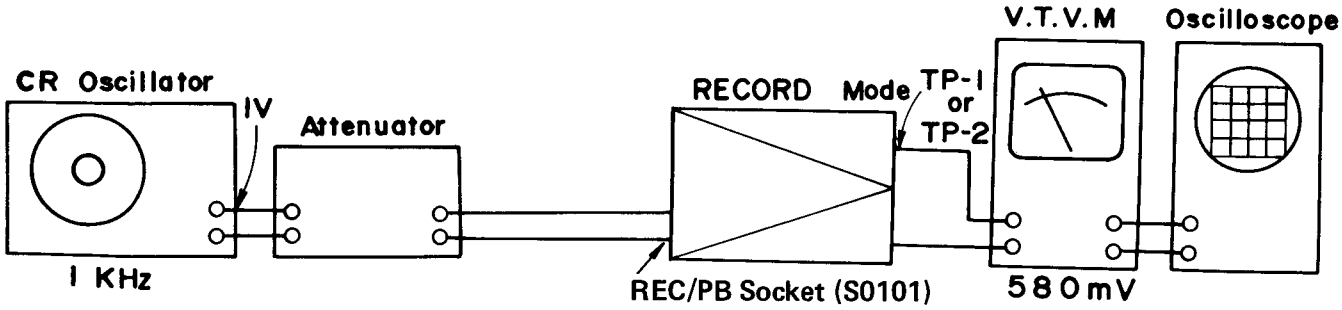


Figure 12

PLAYBACK SENSITIVITY ADJUSTMENT (Refer to Figure 13)

1) Set the unit at playback mode.
2) Connect the V.T.V.M. in the between the test point (TP-1, TP-2) and earth.
3) Load the unit with a test tape (MTT-150, 400 Hz recorded) and play it.
4) Set Dolby Noise Reduction Switch (SW-5) in the off position, and Auto Tape Selector Switch (SW6) in the normal position.
5) At this time, adjust the semi-variable resistor (VR1, VR2) so that the V.T.V.M. reads 580mV.

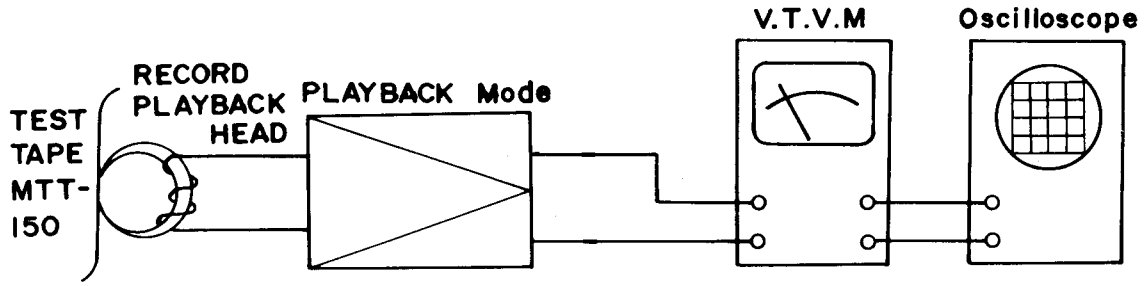


Figure 13

ERASE CURRENT CHECK (Refer to Figure 14)

1) Set the unit at "RECORD" mode.
2) Set the Auto Tape Selector Switch (SW6) in the CrO_2 position.
3) Connect V.T.V.M. to the test point (TP3) and earth.
   It is normal if V.T.V.M.'s reading is 50 ~ 110mV.
4) To check the normal position, leave Auto Tape Selector Switch (SW6) in the NORMAL position.
   It is normal if V.T.V.M.'s reading is 35 ~ 85mV.

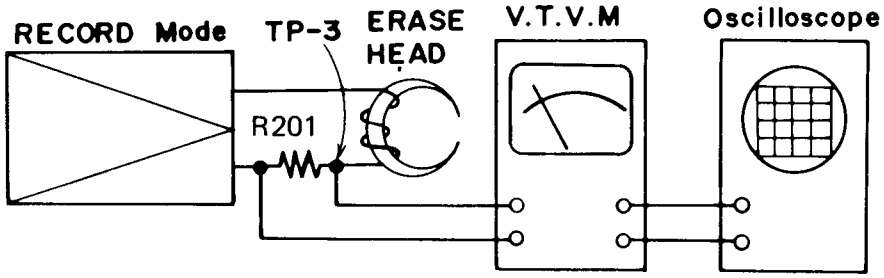


Figure 14

RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT (Refer to Figure 15)

1) Set Dolby Noise Reduction Switch (SW5) in the off position.
2) Set Auto Tape Selector Switch (SW6) in the normal position.
3) Connect 50K ohm dummy resistor to the REC/PB Socket (SO101) and connect the V.T.V.M. to its ends.
4) Insert the test tape (MTT-114, 10 kHz Recorded).
5) Adjust the adjusting screw so that the playback output voltage of the test tape becomes maximum in the sides and the phase between channels gets same.

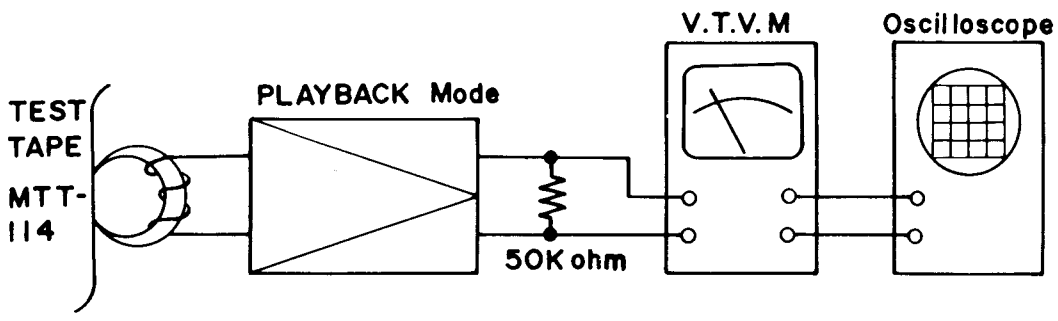


Figure 15

RECORD/PLAYBACK SENSITIVITY ADJUSTMENT (Refer to Figure 16)

1) Connect the V.T.V.M. in between the test point (TP-1, TP-2) and earth.
2) Insert the tape (non-recorded), and set the DIN Input Level Switch (SW3) in the HIGH position.
3) With the unit set at "RECORD" mode, give it signal of −10 dB, 1 kHz from REC/PB Socket (SO101) and adjust RECORD LEVEL Control (VR3, VR4) so that the V.T.V.M. reads 410mV.
4) Adjust the semi-variable resistor (VR5, VR6) so that the V.T.V.M. reads the playback output voltage of 410mV.
5) To check the CrO_2 tape, leave Auto Tape Switch (SW6) in the CrO_2 position.
6) It is normal if V.T.V.M.'s reading is 330 ~ 510mV.

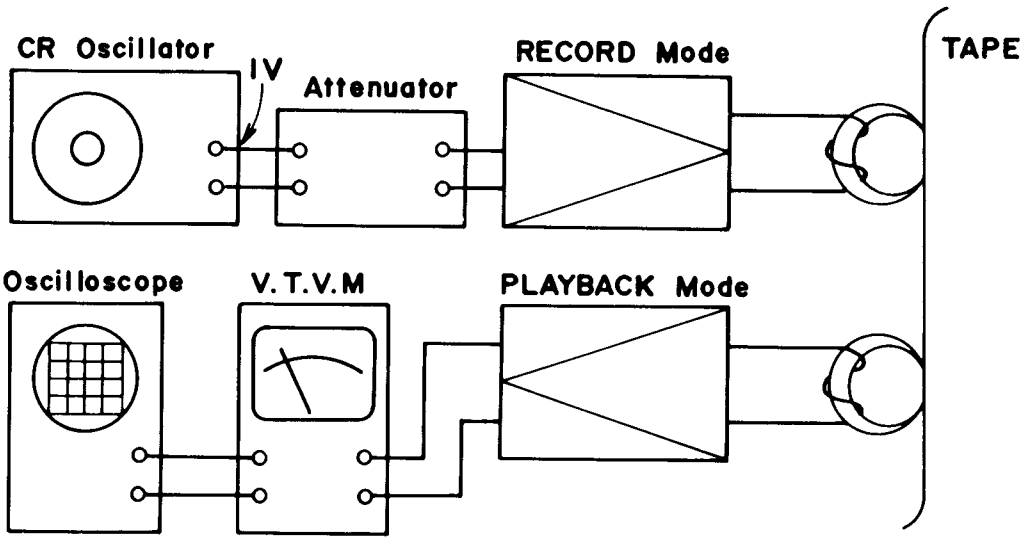


Figure 16

DOLBY NOISE REDUCTION CIRCUIT CHECK (Refer to Figure 17)

1. Connect the V.T.V.M. in between the test point (TP-1, TP-2) and earth.
2. Set Dolby noise reduction switch (SW5) in the ON position, and DIN Input Level Switch (SW 3) in the HIGH position.
3. Insert the tape (non-recorded).
4. With the unit set at "RECORD" mode, give it signal of −35 dB, 100 Hz from REC/PB terminal (SO 101) and adjust RECORD LEVEL control (VR3, VR4) so that the V.T.V.M. reads 32.6 mV.
5. Give the unit 1 kHz signal, 10 kHz signal and 12.5 kHz signal in the order and if the V.T.V.M. reads as tabulated below with each input signal, it is normal.

Frequency	1 kHz	10 kHz	12.5 kHz
V.T.V.M. reads	45.7 ~ 81 mV	44.5 ~ 70mV	42.6 ~68.2 mV

6. Give the unit signal of −50 dB, 100 Hz and adjust RECORD LEVEL control (VR3, VR4) so the V.T.V.M. reads 5.8 mV.
7. In the same manner as in the step 5 above, give the unit 1 kHz signal, 10 kHz signal and 12.5 kHz signal in the order and if the V.T.V.M. reads as tabulated below with each signal, it is normal.

Frequency	1 kHz	10 kHz	12.5 kHz
V.T.V.M. reads	8.2 ~ 16.4 mV	13.7 ~ 24.9 mV	13.5 ~ 23.4 mV

Notes: The abnormal oscillation of Dolby noise reduction circuit is mainly attributable to the two causes:
1. IC (Integrated Circuit) for Dolby noise reduction is inferior.
2. Voltage (6.8V ±10%) being at the No. 4 terminal of IC for Dolby noise reduction is abnormal. (ZD1 and ZD2 are defective or they are inserted erroneously.)

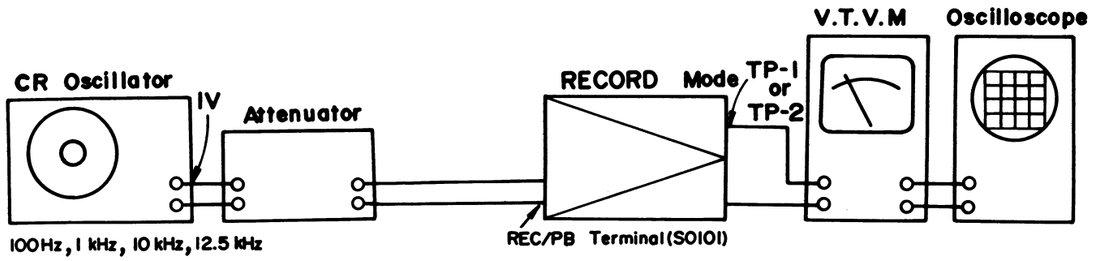


Figure 17

CIRCUIT DESCRIPTION

DOLBY NR

The construction of DOLBY NR circuit is as shown below.

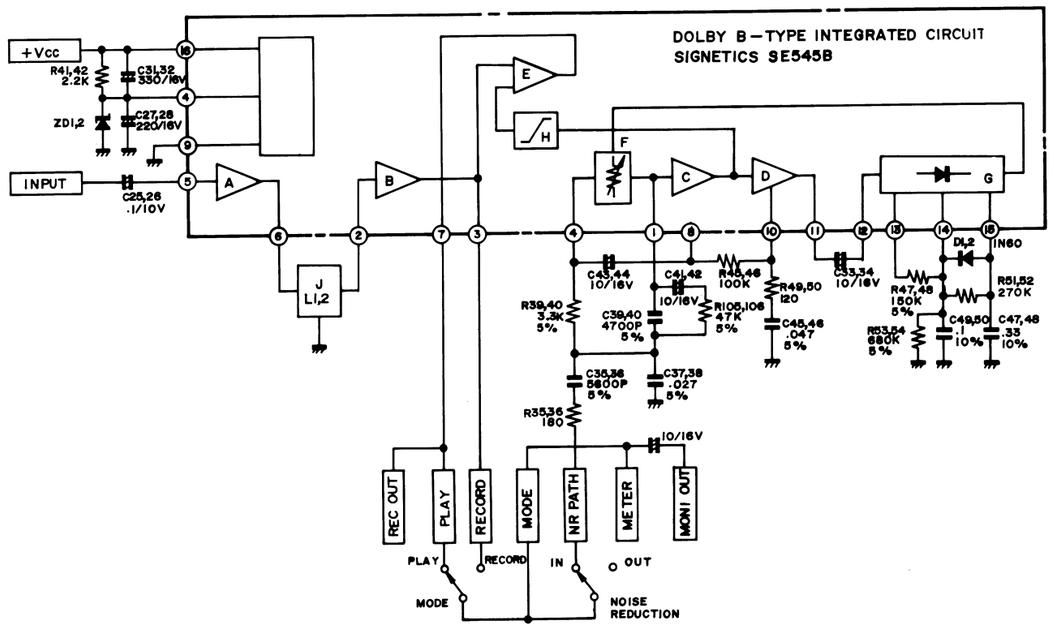


Figure 18

The amplifier circuits (A) and (B) are ordinary type. But the Dolby Summing (E) is an amplifier circuit that inverses only the polarity, having the gain of 1. Dolby Side Chain (F, C, D, G) is high-speed limiter that operate on high- or medium-frequency.

The Fig. 19 shows the input/output characteristic curve of the Dolby Side Chain circuit and the curve varies according to the change of frequency.

The frequency characteristic is as shown in Fig. 20 and it is the same as that of the high-pass filter of 6 dB/octave.

The turnover frequency of the curve also varies according to the change of input level.

If the output signal from Dolby Side Chain circuit shown in Fig. 19 or 20 and ordinary signal from the amplifier circuit (B) are supplied to the Dolby Summing (E) circuit, these two signals are added to the each other in the record mode showing a compressor characteristic while they are substracted from the each other in play mode showing an expander characteristic – the input/output characteristic shown in Fig. 21 is obtained at Rec. Amp. terminal.

Dolby Side Chain Circuit

The characteristic of the high-pass filter of 6 dB/octave shown in Fig. 20 is obtained by that the composite impedances with C35 (36), C37 (38), C39 (40), R35 (36), R39 (40) and R105 (106), and the filter impedance are added to the each other to form an attenuator. The input/output characteristic in Fig. 19 is obtained by that DC voltage in proportion to the input is fed back to the attenuator (F). The circuit (C) increases the output of the attenuator to the specified voltage to supply the output to the Dolby Summing Circuit. The circuit (D, G) generates DC voltage and it also controls attack time and recovery time of the limiter.

Simultaneously, AC signal is applied to DC voltage to become NF signal being fed to the circuit (F), in order to reduce the distortion. The Fig. 22 represents all the blocks composing of the Dolby Side Chain circuit and shows how they are operating.

Described as above, the Dolby NR circuit compounds linear signal and non-linear signal to produce compressor characteristic in record mode and expander characteristic in playback mode – if these two characteristics are mixed, an original linear characteristic is restored. Thus, noise is reduced because high-frequency signal is attenuated when it passes through the expander circuit.

Cautions on Repairing

1) The following parts out of those which are used for Dolby circuit P.W.B. should be at less than the error of ±5%.
   R39, R40, R105, R106, R47, R48, R53, R54
   C35, C36, C37, C38, C39, C40, C45, C46
2) The following parts should be those with the error of of within ±10%.
   C47, C48, C49, C50
   * If the following tapes are used under DOLBY NR mode, high-frequency may be lowered.
     BASF standard tape, SCOTCH standard tape and MEMOREX CrO_2 tape.
   * If you repair the unit owned by an user who employs the tape of a particular brand, it is recommendable when servicing to use the same tape as used by the user.

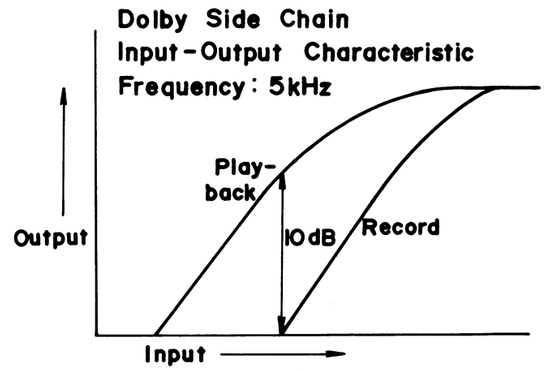


Figure 19

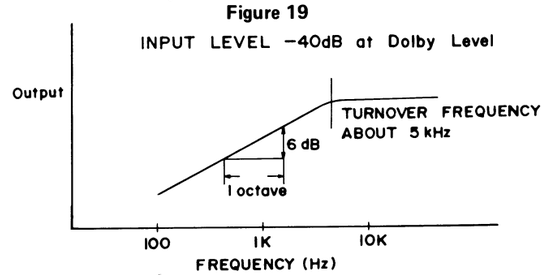


Figure 20

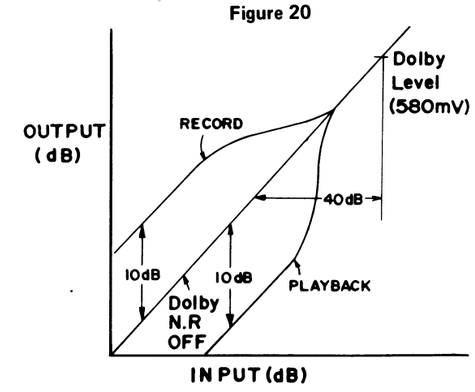


Figure 21

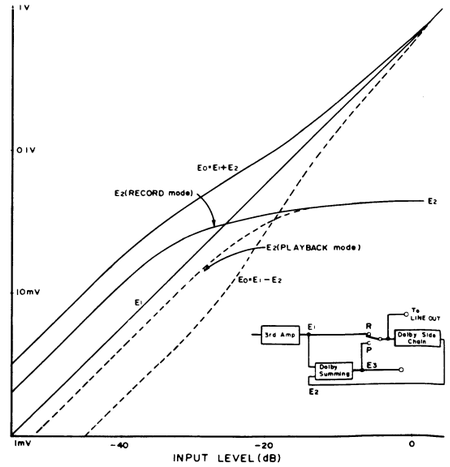


Figure 22

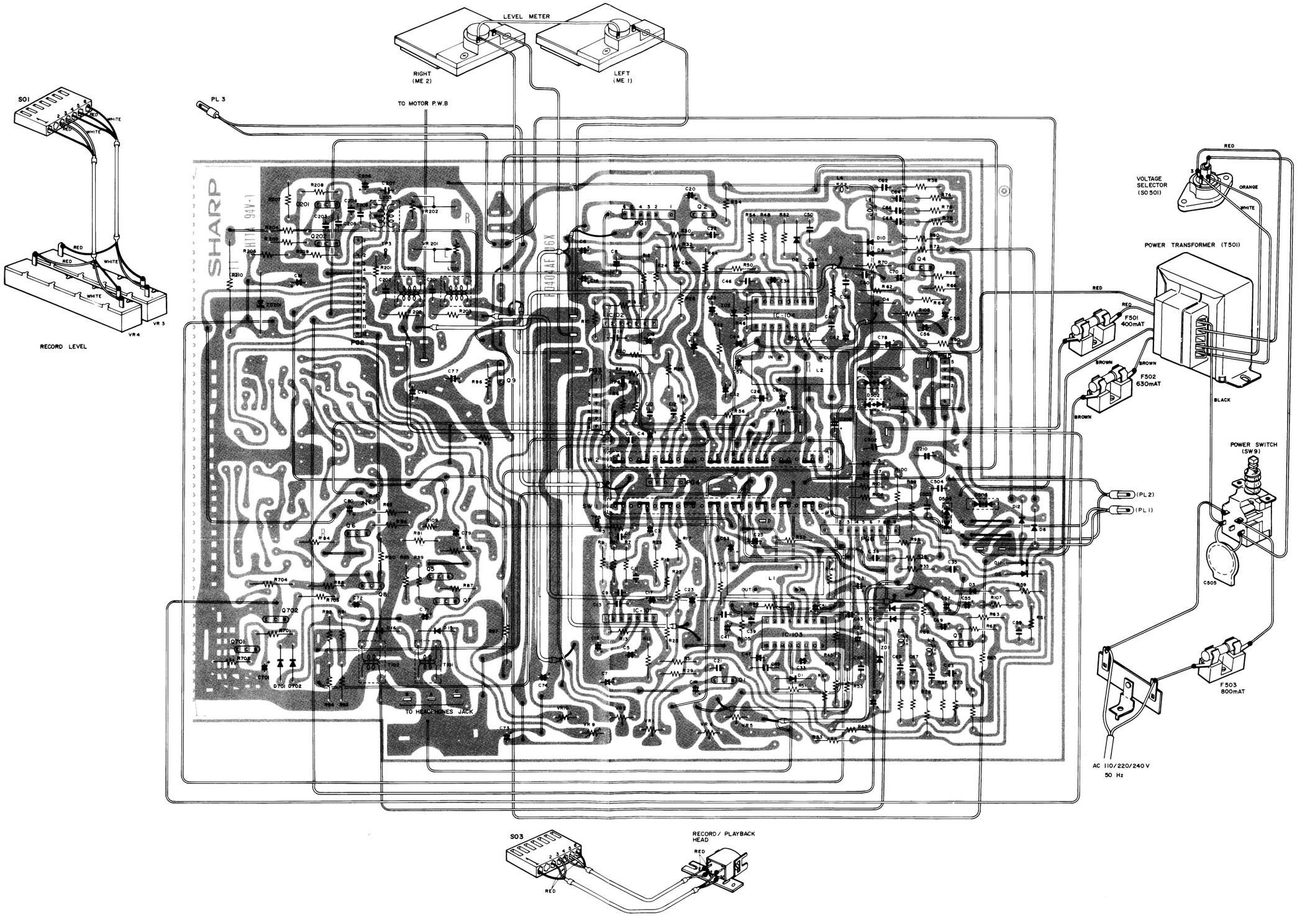
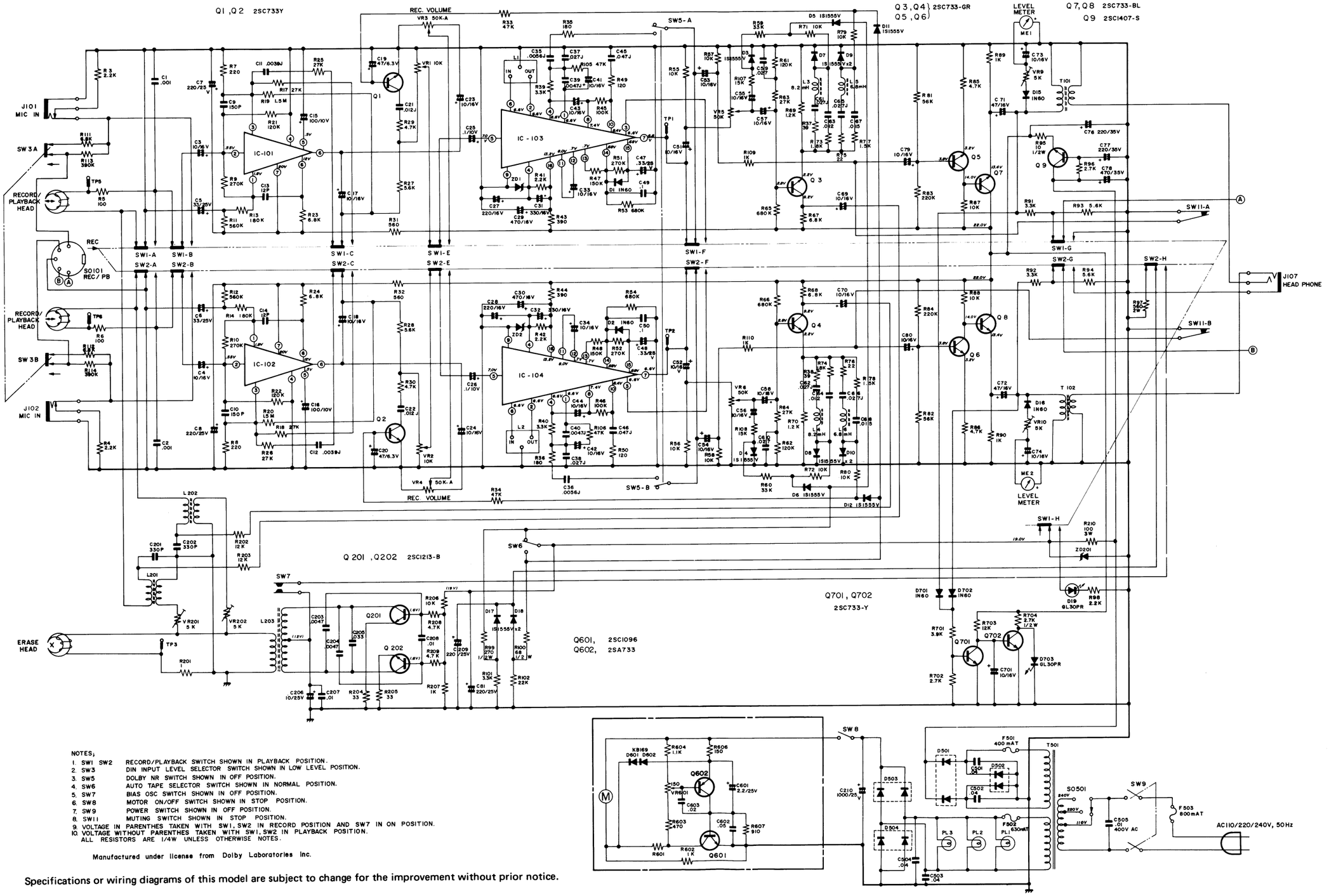


Figure 23 PRINTED CIRCUIT BOARD WIRING SIDE (1/2)



NOTES,

1. SW1 SW2 RECORD/PLAYBACK SWITCH SHOWN IN PLAYBACK POSITION.
2. SW3 DIN INPUT LEVEL SELECTOR SWITCH SHOWN IN LOW LEVEL POSITION.
3. SW5 DOLBY NR SWITCH SHOWN IN OFF POSITION.
4. SW6 AUTO TAPE SELECTOR SWITCH SHOWN IN NORMAL POSITION.
5. SW7 BIAS OSC SWITCH SHOWN IN OFF POSITION.
6. SW8 MOTOR ON/OFF SWITCH SHOWN IN STOP POSITION.
7. SW9 POWER SWITCH SHOWN IN OFF POSITION.
8. SW11 MUTING SWITCH SHOWN IN OFF POSITION.
9. VOLTAGE IN PARENTHES TAKEN WITH SW1, SW2 IN RECORD POSITION AND SW7 IN ON POSITION.
10. VOLTAGE WITHOUT PARENTHES TAKEN WITH SW1, SW2 IN PLAYBACK POSITION.

ALL RESISTORS ARE 1/4W UNLESS OTHERWISE NOTES.

Manufactured under license from Dolby Laboratories Inc.

Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.

Figure 24 SCHEMATIC DIAGRAM

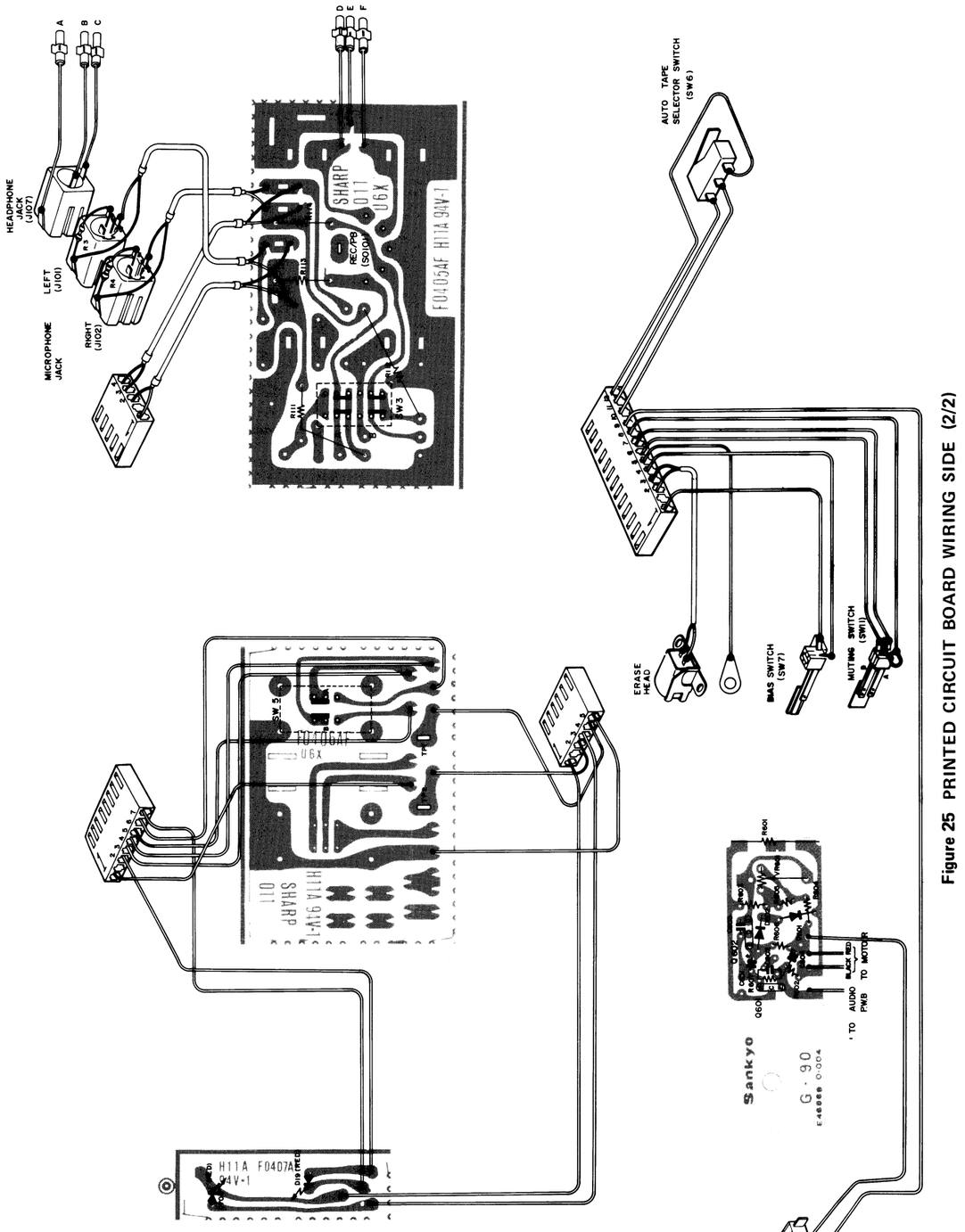


Figure 25 PRINTED CIRCUIT BOARD WIRING SIDE (2/2)

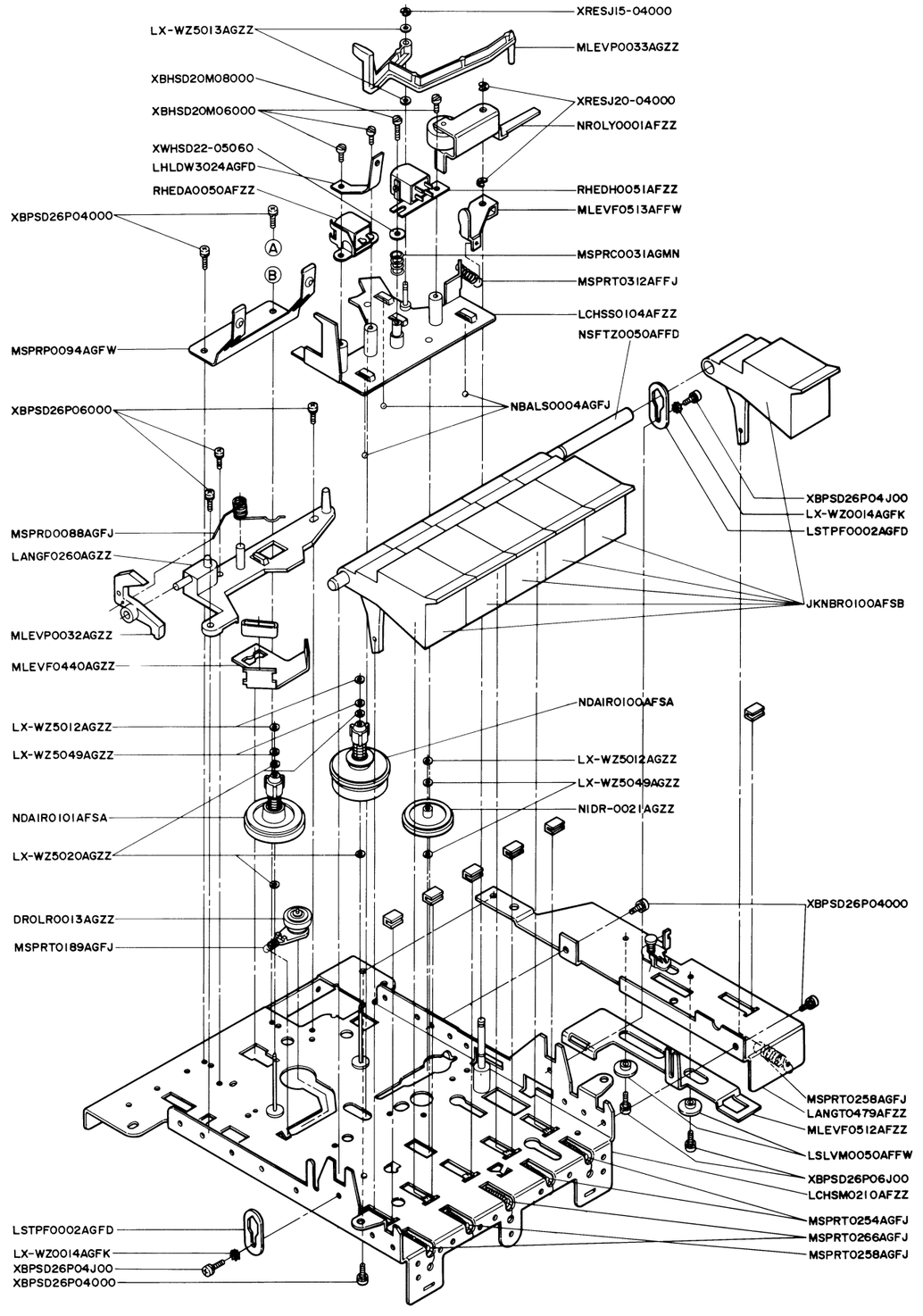


Figure 26 MECHANISM EXPLODED TOP VIEW

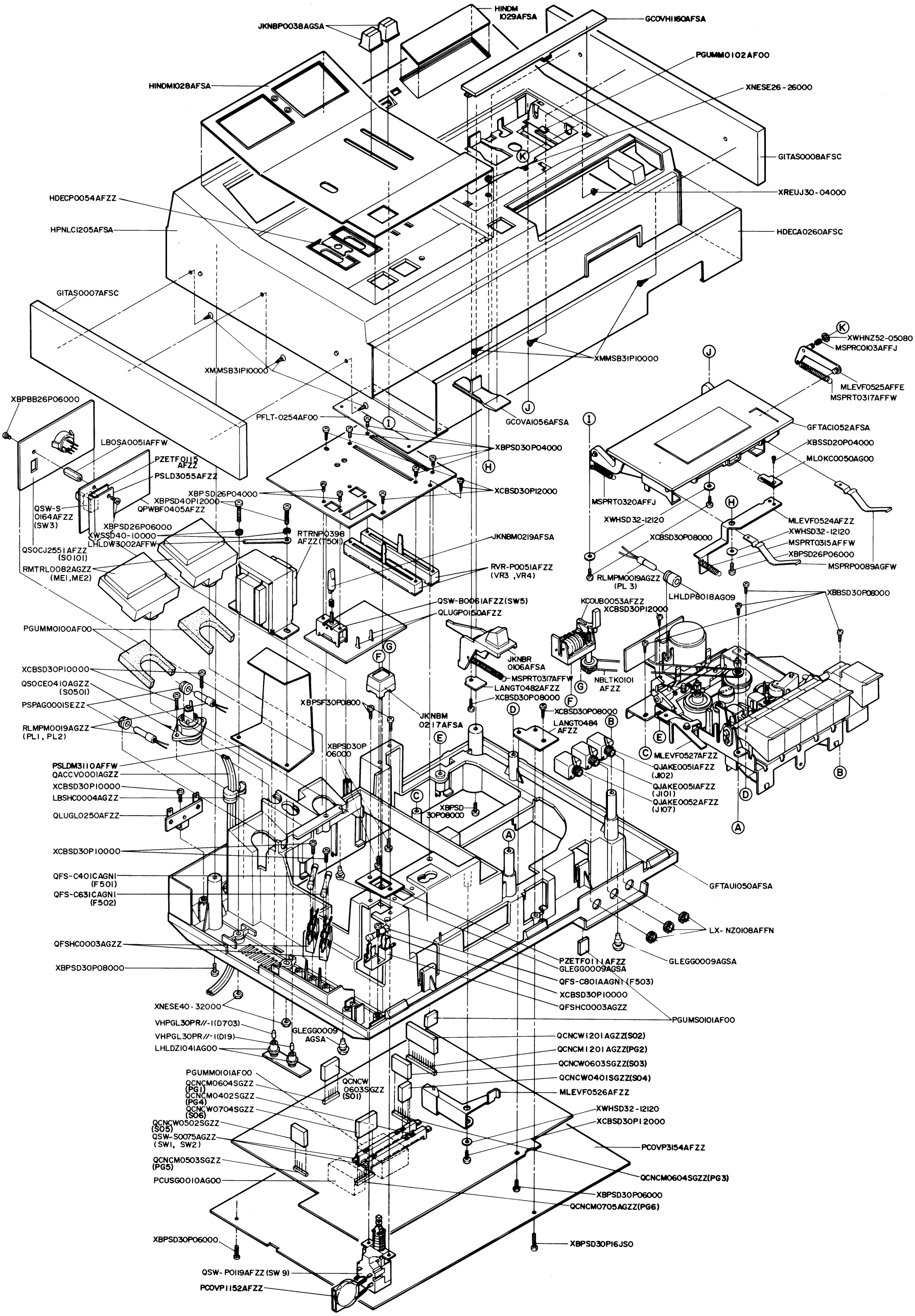


Figure 27 CABINET EXPLODED VIEW

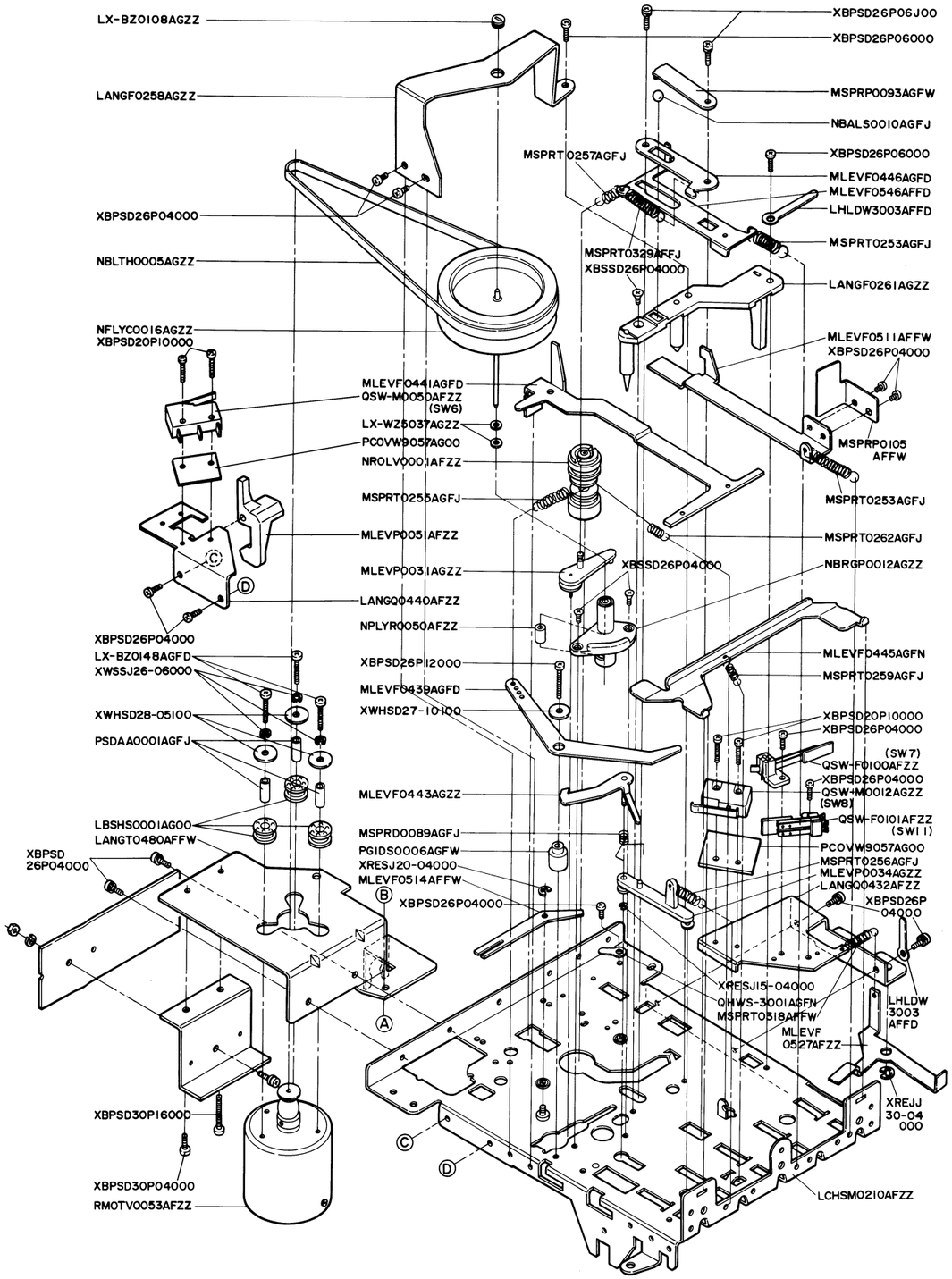


Figure 28 MECHANISM EXPLODED BOTTOM VIEW

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"
To have your order filled promptly and correctly, please furnish the following informations.
1. MODEL NUMBER 2. REF. NO.
3. PART NO. 4. DESCRIPTION

REF. NO.	PART NO.	DESCRIPTION	CODE
		CAPACITORS	
C47, C48	VCAAAU1EB334M	.33MFD, 25V, +20–20%, Aluminum Electrolytic	AC
C505	RC-KZ0087AGZZ	.01MFD, 400V, +100–0%, Ceramic	AE
		RESISTORS	
R95	RR-XZ0001AGZZ	10 ohm, 1/2W, +5–5%, Oxide Film	AB
R97	VRS-PT3DB561K	560 ohm, 2W, +10–10%, Oxide Film	AD
R210	VRS-PT3LA101K	100 ohm, 3W, +10–10%, Oxide Film	AC
		CONTROLS	
VR1, VR2	RVR-M0093AGZZ	10K ohm, Playback Sensitivity Adjust	AC
VR3, VR4	RVR-P0051AFZZ	50K ohm, RECORD LEVEL	AG
VR5, VR6	RVR-M0011AGZZ	50K ohm, Record Sensitivity Adjust	AC
VR9, VR10	RVR-M0094AGZZ	5K ohm, Meter Sensitivity Adjust	AC
VR201, VR202	RVR-M0049AGZZ	5K ohm, Bias Current Adjust	AC
		TRANSISTORS	
Q1, Q2	VS2SC733-Y/-1	Equalizer Amp.	AF
Q3, Q4	VS2SC733GR/-1	Record Amp.	AF
Q5, Q6	VS2SC733GR/-1	Headphone Amp.	AF
Q7, Q8	VS2SC733-B/-1	Meter Amp.	AF
Q9	VS2SC1407-S1F	Ripple Filter	AF
Q201, Q202	VS2SC1213-B-3	Bias Oscillator	AF
Q701	VS2SC733-Y/-1	Pead Level	AF
Q702	VS2SC733-Y/-1	Peak Level	AF
		DIODES	
D1, D2	VHD1N60////-1	Switching	AB
D3, D4	VHD1S1555V/1G	Switching	AC
D5, D6	VHD1S1555V/1G	Switching	AC
D7, D8	VRD1S1555V/1G	Switching	AC
D9, D10	VHD1S1555V/1G	Switching	AC
D11, D12	VHD1S1555V/1G	Switching	AC
D15, D16	VHD1N60////-1	Meter Rectifier	AB
D17, D18	VHD1S1555V/1G	Switching	AC
D19	VHPGL30PR//-1	Record Indicator	AE
D501	RH-DX1003AFZZ	Rectifier	AD
D502	RH-DX1004AFZZ	Rectifier	AD
D503	RH-DX1003AFZZ	Rectifier	AD
D504	RH-DX1004AFZZ	Rectifier	AD
D701, D702	VHD1N60////-1	Detector	AB
D703	VHPGL30PR//-1	Peak Level Indicator	AE
ZD1, ZD2	VHE02Z6R8A/-1	Constant Voltage	AE
ZD201	VHEBZ-192//1G	Constant Voltage	AG
		COILS	
L1, L2	RCILL0051AFZZ	19KHz Low Pass Filter	AL
L3, L4	RCILZ0016AGZZ	Record Equalizer	AD
L5, L6	RCILZ0019AGZZ	Record Equalizer	AD
L201, L202	RCILB0087AGZZ	Bias Step-up	AF
L203	RCILB0085AGZZ	Bias Oscillator	AF
		TRANSFORMERS	
T101, T102	RTRNS0027AGZZ	Headphone Output	AE
T501	RTRNP0398AFZZ	Power	AW
		INTEGRATED CIRCUITS	
IC101, IC102	RH-IX0437AGZZ	Audio Amp.	AH
IC103, IC104	RH-IX0431AGZZ	Dolby Noise Reduction Circuit	AY
		MISCELLANEOUS	
	DROLR0013AGZZ	Roller, Rewind	AG
	GCOVA1056AFSA	Illumination, Tape	AC
	GCOVH1160AFSA	Cover, Head	AF
	GFTAC1052AFSA	Lid, Cassette Compartment	AL
	GFTAU1050AFSA	Cabinet, Bottom	AQ
	GITAS0007AFSC	Board, Left Side	AK
	GITAS0008AFSC	Board, Right Side	AK
	GLEGG0009AGSA	Leg, Rubber	AA
	HDECA0260AFSC	Decoration, Front	AK
	HDECP0054AFZZ	Plate, Slide, Switch	AA
	HINDM1028AFSA	Decoration, RECORD LEVEL	AN
	HINDM1029AFSA	Decoration, SHARP	AC
	HPNLC1205AFSA	Panel, Top	AW

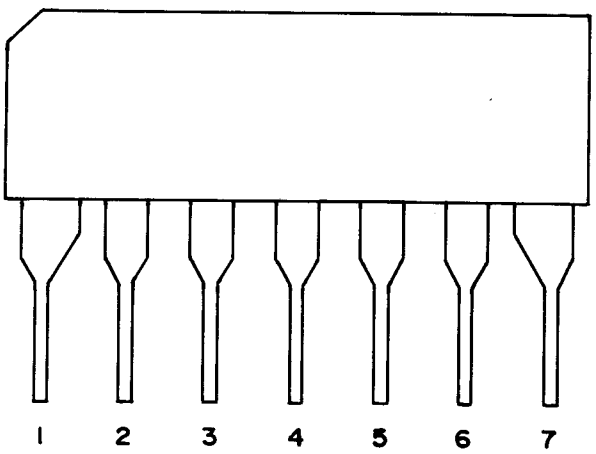
PARTS LIST

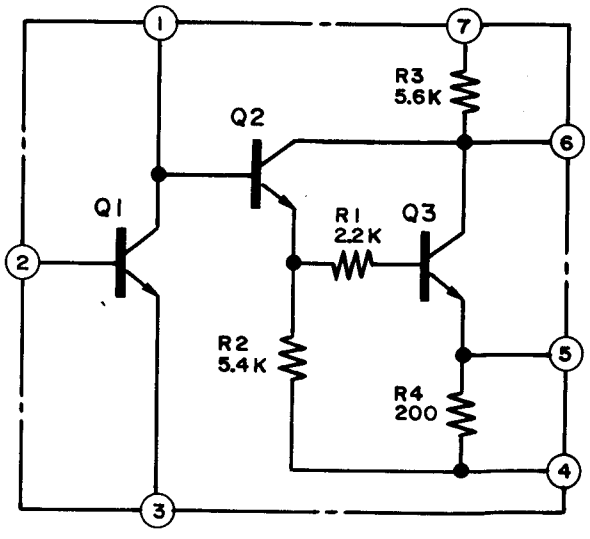
REF. NO.	PART NO.	DESCRIPTION	CODE
	JKNBM0217AFSA	Knob, POWER	AD
	JKNBM0219AFSA	Knob, DOLBY NR	AD
	JKNBP0038AGSA	Knob, RECORD LEVEL	AD
	JKNBR0100AFSB	Knob, Function	AH
	JKNBR0106AFSA	Knob, EJECT	AC
	KCOUB0053AFZZ	Counter	AN
	LANGF0258AGZZ	Bracket, Flywheel	AC
	LANGF0260AGZZ	Bracket, Record Safety Lever	AD
	LANGF0261AGZZ	Bracket, Tape Guide (40A115)	AE
	LANGQ0432AFZZ	Bracket, Switch Retaining	AD
	LANGQ0440AFZZ	Bracket, Auto Tape Selector Switch	AD
	LANGT0479AFZZ	Bracket, Pause Lever	AF
	LANGT0480AFFW	Bracket, Motor	AE
	LANGT0482AFZZ	Bracket, EJECT Knob	AA
	LANGT0483AFZZ	Bracket, RECORD LEVEL	AD
	LANGT0484AFZZ	Bracket, Printed Wiring Board	AB
	LBOSA0051AFFW	Spacer, Terminal	AB
	LBSHC0002AGZZ	Bushing, AC Cord	AB
	LBSHC0007AFZZ	Bushing, AC Cord	AB
	LBSHS0001AG00	Cushion, Rubber, Motor (40A146)	AA
	LCHSM0210AFZZ	Mechanism Mounting Plate	AN
	LCHSS0104AFZZ	Sub-chassis	AG
	LHLDP8018AG09	Holder, Tape Illumination Lamp	AA
	LHLDW3002AFFD	Holder, Wire	AA
	LHLDW3024AGFD	Wire Holder (36A0057)	AA
	LHLDZ1041AG00	Holder, PEAK/REC Indicator	AB
	LSLVM0050AFFW	Spacer, Pause Lever	AA
	LSTPF0002AGFD	Bracket, Function Button Shaft (40A150)	AA
	LX-BZ0108AGZZ	Screw, Flywheel Thrust Adjust (40A141)	AB
	LX-NZ0108AFFN	Nut, Microphone/Headphone Jacks	AB
	MLEVF0439AGFD	Lever, Fast Forward	AB
	MLEVF0440AGZZ	Lever, Brake (40A116-A)	AC
	MLEVF0441AGFD	Lever, Over Stroke	AC
	MLEVF0443AGZZ	Lever, Auto Stop	AC
	MLEVF0445AGFN	Lever, Lock (40A154)	AC
	MLEVF0446AGFD	Lever, Over Stroke Spring	AB
	MLEVF0511AFFW	Lever, Record Operation	AC
	MLEVF0512AFZZ	Lever, Pause	AC
	MLEVF0513AFFW	Lever, Pressure Roller	AC
	MLEVF0514AFFW	Lever, Take-up Idler	AB
	MLEVF0524AFZZ	Lever, Lock (40A154)	AB
	MLEVF0525AFFE	Lever, Cassette Holder Up Arm	AD
	MLEVF0526AFZZ	Lever, Record/Playback Switching	AE
	MLEVF0527AFZZ	Lever, Eject Safety	AB
	MLEVF0546AFFD	Lever, Over Stroke	AA
	MLEVP0031AGZZ	Lever, Take-up Idler (40A135)	AE
	MLEVP0032AGZZ	Lever, Record Safety (40A118-A)	AB
	MLEVP0033AGZZ	Lever, Tape End Sensing (40A108)	AC
	MLEVP0034AGZZ	Lever, Auto Stop (40A122)	AB
	MLEVP0051AFZZ	Lever, Auto Tape Selector	AC
	MLOKC0050AG00	Lever, Lock	AC
	MSPRC0031AGMN	Spring, Head Azimuth	AA
	MSPRC0103AFFJ	Spring, Cassette Holder Up Arm Lever	AA
	MSPRD0088AGFJ	Spring, Record Safety Lever	AB
	MSPRD0089AGFJ	Spring, Auto Stop Lever (40A123-A)	AB
	MSPRP0089AGFW	Spring, Cassette Retaining	AB
	MSPRP0093AGFW	Spring, Sub-chassis Retaining (40A132-A)	AB
	MSPRP0094AGFW	Spring, Cassette Retaining	AB
	MSPRP0105AFFW	Plate, Spring, Record/Playback Switches	AB
	MSPRT0189AGFJ	Spring, Rewind Roller Lever	AA
	MSPRT0253AGFJ	Spring, Record Connecting Lever	AA
	MSPRT0254AGFJ	Spring, Function Button (40A151)	AA
	MSPRT0255AGFJ	Spring, Fast Forward Roller	AA
	MSPRT0256AGFJ	Spring, Auto Stop Lever Return (40A124)	AA
	MSPRT0257AGFJ	Spring, Take-up Ider (40A136)	AA
	MSPRT0258AGFJ	Spring, REWIND Button	AA
	MSPRT0259AGFJ	Spring, Lock Plate (40A155)	AA
	MSPRT0262AGFJ	Spring, Fast Forward Roller	AC
	MSPRT0266AGFJ	Spring, RECORD/Fast Forward Button	AA
	MSPRT0312AFFJ	Spring, Pressure Roller Lever	AA
	MSPRT0315AFFW	Spring, Cassette Compartment, Lock	AA
	MSPRT0317AFFW	Spring, EJECT Knob	AA
	MSPRT0318AFFW	Spring, Eject Safety Lever	AA
	MSPRT0320AFFJ	Spring, Cassette Compartment	AA
	MSPRT0329AFFJ	Spring, Over Stroke	AA
	NBALS0004AGFJ	Ball, 2.5ϕ	AA
	NBALS0010AGFJ	Ball, 3/16"ϕ	AA
	NBLTH0005AGZZ	Belt, Drive	AE
	NBLTK0101AFZZ	Belt, Counter	AC
	NBRGP0012AGZZ	Bearing, Capstan (40A120-A)	AH
	NDAIR0100AFSA	Turntable, Take-up	AG
	NDAIR0101AFSA	Turntable, Supply	AE
	NFLYC0016AGZZ	Flywheel	AN
	NIDR-0021AGZZ	Idler, Take-up (40A142-A)	AD
	NPLYR0050AFZZ	Pulley, Take-up	AD
	NROLV0001AFZZ	Roller, Fast Forward	AK
	NROLY0001AFZZ	Lever, Pressure Roller	AG
	NSFTZ0050AFFD	Shaft, Function Button	AD
	PCOVP1152AFZZ	Cover, Capacitor	AB
	PCOVP3154AFZZ	Cover, Printed Wiring Board	AG
	PCOVW9057AG00	Insulator, Motor Switch	AA
	PCUSG0010AG00	Cushion, Printed Wiring Board	AA
	PFLT-0254AF00	Felt, RECORD LEVEL	AA
	PGIDS0006AGFW	Spacer, Fast Forward Lever	AB
	PGUMM0100AF00	Holder, Lever Meter	AA
	PGUMM0101AF00	Cushion, Printed Wiring Board	AA
	PGUMM0102AF00	Cushion, Rubber, Cassette Compartment Lid	AA
	PGUMS0101AF00	Cushion, Top Cabinet	AA
	PSDAA0001AGFJ	Spacer, Motor Cushion	AB
	PSLDC3055AFZZ	Plate, Shield, Socket P.W.B.	AB
	PSPAG0001SEZZ	Holder, Lamp	AA
	PZETF0111AFZZ	Insulator, POWER Switch	AA
	PZETF0115AFZZ	Insulator, Shield Plate	AA
	PZETV0007TAZZ	Cover, Tip	AA
	QACCB0052AF09	Cord, AC Supply	AM
	QACCV0001AGZZ	Cord, AC Supply	AN
PG4	QCNCM0402SGZZ	Plug, 4 Pin	AD
PG5	QCNCM0503SGZZ	Plug, 5 Pin	AD
PG1,PG3	QCNCM0604SGZZ	Plug, 6 Pin	AD
PG6	QCNCM0705SGZZ	Plug, 7 Pin	AE
PG2	QCNCM1201AGZZ	Plug, 12 Pin	AE
SO4	QCNCW0401SGZZ	Socket, 4 Pin	AB
SO5	QCNCW0502SGZZ	Socket, 5 Pin	AB
SO1,SO3	QCNCW0603SGZZ	Socket, 6 Pin	AB
SO6	QCNCW0704SGZZ	Socket, 7 Pin	AC

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
SO2	QCNCW1201AGZZ	Socket, 12 Pin	AC
F501	QFS-C401CAGNI	Fuse, 400mAT	AE
F502	QFS-C631CAGNI	Fuse, 630mAT	AE
F503	QFS-C801AAGNI	Fuse, 800mAT	AE
	QFSHC0003AGZZ	Holder, Fuse	AD
	QHWS-3001AGFN	Terminal, Ground	AA
J101, J102	QJAKE0051AFZZ	Jack, Microphone	AE
J103	QJAKE0052AFZZ	Jack, Headphone	AE
	QLUGL0250AFZZ	Lug Terminal, 2 Terminal	AA
	QLUGP0150AFZZ	Lug Terminal	AA
	QLUGQ0105AGZZ	Lug Terminal	AA
	QPWBF0404AFZZ	Printed Wiring Board, Record/ Playback Amp.	AX
	QPWBF0405AFZZ	Printed Wiring Board, REC/PB Socket	AF
	QPWPF0406AFZZ	Printed Wiring Board, DOLBY NR Switch	AE
	QPWBF0407AFZZ	Printed Wiring Board, PEAK/REC Indicator	AC
SO101	QSOCD2551AFZZ	Socket, REC/PB	AG
SO501	QSOCE0410AGZZ	Socket, Voltage Selector	AH
SW5	QSW-B0061AFZZ	Switch, DOLBY NR	AF
SW7	QSW-F0100AFZZ	Switch, Bias	AE
SW11	QSW-F0101AFZZ	Switch, Muting	AE
SW8	QSW-M0012AGZZ	Switch, Motor	AF
SW6	QSW-M0050AFZZ	Switch, Auto Tape Selector	AG
SW9	QSW-P0119AFZZ	Switch, POWER	AP
SW1, SW2	QSW-S0075AGZZ	Switch, Record/Playback	AH
SW3A, B	QSW-S0164AFZZ	Switch, HIGH/LOW	AE
	QTIPF0001CEYW	Tip	AA
	QTIPZ0002SGZZ	Tip, Plug	AA
	RHEDA0050AFZZ	Head, Erase	AN
	RHEDH0051AFZZ	Head, Record/Playback	AW
PL1, PL2	RLMPM0019AGZZ	Pilot Lamp, Meter Illumination	AE
PL3	RLMPM0019AGZZ	Pilot Lamp, Tape Illumination	AE
	RMOTV0053AFZZ	Motor	AZ
ME1, ME2	RMTRL0082AGZZ	Meter, Record/Playback Level	AT
	RTPEK0034AGZZ	Cassette Tape	AP
	TSPC-0351AFZZ	Plate, Specification	AA

IC101, IC102 RH-IX0437AGZZ





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